Q:-

⑦

p	q	~q	p ∧ ~q Conjuction.	~(p ∧ ~q)
T	F	T	T	F
F	T	F	F	T
F	F	T	F	T
T	T	F	F	T

p	q	r	$p \vee q$	$\sim r$	$(p \vee q) \sim \sim r$	$(p \vee q) \wedge r$
T	T	T	T	F	F	T
T	T	F	F	T	T	F
T	F	T	T	F	F	T
F	T	T	T	F	F	F
F	T	T	T	F	F	F
T	T	F	T	T	T	F
F	F	P	F	T	F	F

Q. Determine whether these biconditionals are
true or false:-

(1.) $2 + 2 = 4$ iff $1 + 1 = 2$. (T)

(2.) $1 + 1 = 2$ iff $2 + 3 = 4$. (F)

(3.) $1 + 1 = 3$ iff monkeys can fly (F)

(4.)

Q. Determine whether these conditional
statements are true or false:-

(1.) If $1 + 1 = 2$, then $2 + 2 = 5$. → (F)
        (T)   (F)

(2.) If $1 + 1 = 3$, then $2 + 2 = 4$. → (T)

Converse, Contrapositive & Inverse

If p then q. Let p & q be prop. The
If p then q, then converse of this
prop^n is if q then p. ie $q → p$.

Contrapositives → Let p & q be prop. The
the contrapositive of $p → q$ is the
prop. $¬q → ¬p$

Inverse → Let p & q be prop. Then, the
inverse of $p → q$ is the prop^n
$¬p → ¬q$.

Ex:- The home team wins whenever it is raining

$$p \to q$$

$p :-$ It is raining

$q :-$ the home team wins.

Contrapositive: If The home team does not win, then it is not raining.

Converse:- If the home team wins, then it is raining

Inverse:- If it is not raining, then the home team does not win.